Safety in Numbers
Using Statistics to Make the Transportation System Safer

Research Project #5

Develop Common Data on Accident Circumstances

Common Data on Accident Circumstances

Objectives

- Determine most important data items
  - Identify useful conceptual framework
- Describe what is now collected
- Identify gaps
- Make recommendations

Common Data on Accident Circumstances

Conceptual Framework: The Haddon Matrix

- Three phases:
  - pre-event - contributing to likelihood that a potentially damaging event will occur
  - event - influencing the chance of injury when an event (crash, fall, etc.) occurs
  - post-event - influencing the chance of survival or complete recovery

Common Data on Accident Circumstances

The Haddon Matrix

	Human	Vehicle	Physical Environment	Social Environment
Pre-Event				
Event				
Post-Event				

Common Data on Accident Circumstances

Advantages of the Haddon Matrix

- Relevant to all transportation modes
- Well-known and widely applied in the injury field

Common Data on Accident Circumstances

Advantages of the Haddon Matrix

- Can be expanded to accommodate various taxonomies
- Can be used to organize
  - Risk factors
  - Exposure
  - Circumstances of injury
  - Preventive measures

Common Data on Accident Circumstances

First Recommendation: Data Elements

- The primary databases for each mode should contain information on the factors that contribute to the likelihood of a mishap or the occurrence or severity of injury.

Common Data on Accident Circumstances

Pre-Event Human Factors

- Operator age, sex, prior record, training, licensure, experience
- Involvement of alcohol and drug use
- Fatigue, length of time on duty, last rest
- Distractions and operator errors
- Medical conditions
- Whether operator was at work
- Other occupants – number, age, sex, at work

Common Data on Accident Circumstances

Data Gaps Include Lack of:

- Information on injury type and severity
- Information on uninjured passengers
- Narrative description
- Detail on human factors
- Guidelines for recording data
- Feedback to investigators
- Linkage with death certificate information

Common Data on Accident Circumstances

Other Data Limitations

- Quality of data often less than optimal
- Some events not recorded by police or DOT
  - Mishaps of off-road vehicles
  - Suicide
  - Terrorism
  - Injuries without collision

Common Data on Accident Circumstances

Other Data Limitations

- Little data on
  - Injury mechanism
  - Whether at work
  - Operator fatigue and distractions

Common Data on Accident Circumstances

Recommended Data Improvements

- Details on crash severity and injury mechanism, at least for samples of crashes
- Inclusion of narrative text
- Greater use of GIS to identify exact location
- Incorporation of data from non-DOT sources
- Greater comparability of data across modes

Common Data on Accident Circumstances

Recommended Improvements in Methods

- Greater use of sampling
- Supplemental studies, e.g., certain vehicles
- Confidential reporting systems
- Special studies using other national databases such as CPSC's NEISS

Common Data on Accident Circumstances

Use of Technology to Improve Data

- Incorporation of Event Data Recorder (EDR) data in police reports
- Installation of Automatic Crash Notification (ACN) in all road vehicles
- Evaluation of effectiveness of current automatic warning systems

Common Data on Accident Circumstances

Other Recommendations

- More timely data, on quarterly basis
- Increased frequency of national surveys such as personal transportation survey
- Data on bicyclist injuries should be obtained from CPSC

Common Data on Accident Circumstances

Conclusion

- Major steps can and should be taken to improve transportation safety data.